

The Pauropoda and Symphyla of the Geneva Museum IX. Symphyla from middle and south Europe, Turkey and Morocco (Myriapoda, Symphyla)

by

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With 2 figures

ABSTRACT

Collections of Symphyla from France, Switzerland, Austria, Spain, Italy, Yugoslavia, Roumania, Hungary, Greece, Turkey and Morocco have been studied. Among 798 specimens 16 species were found, one new to Spain, 2 to Austria and France, 5 to Yugoslavia, one to Hungary, one to Morocco and 2 to Turkey. No symphylans have earlier been reported from the latter country. *Scutigera hauserae* sp. n. from the Postojna cave in Yugoslavia is described.

INTRODUCTION

The following is based upon collections which have accumulated in later years in the Natural History Museum, Geneva. They were brought together mainly by Dr. Bernd Hauser, curator of the Arthropoda section of the Museum, but contributors were also: C. Besuchet, Geneva, P. Brinck and P. H. Enckell, Lund, Sweden, A. Fjellberg, Tromsø, Norway, Elisabeth Hauser and V. Mahner, Geneva, C. Pfaller, Innsbruck, Austria, E. Pretner, Postojna, Yugoslavia, J. C. Régnier, Geneva, Ellen and K. Thaler, Innsbruck, Austria, D. Tzanoudakis, Patras, Greece and the author.

Note: Abbreviations: ad., a specimen with the maximum number of legs; subad. and juv. ..., a subadult specimen with 11 pairs of legs and a juvenile specimen with the number of pairs of legs indicated. These numbers include the rudimentary first pair in *Symphylella*.

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Systematics

Family SCOLOPENDRELLIDAE

Genus *Symphylella* Silvestri, 19021. *Symphylella vulgaris* (Hansen, 1903)

Q. Jl Microsc. Sci., n. Ser. 47: 79-81, pl. 6, figs 6a-d, pl. 7, fig. 1a.

Material examined. 447 specimens.

FRANCE. Pyrénées-Orientales: Forest, near the cave Pouade, 1 ad. { (♂), 1977.IV.2 (Leg. I. Löbl). Alpes-Maritimes: Roquefort-les-Pins, Grotte de la Chèvre d'Or, 1 ad. (♀), 1988.IV.9 (Leg. V. Aellen). Haute-Savoie: Thonon-les-Bains, delta of the Dranses, 1 ad. (♂), 1970.V.23 (Leg. B. Hauser).

SWITZERLAND. Genève; Genève, Natural History Museum, garden, 2 juv. 10 (♂, ♀), 1973.VII.30 (Leg. U. Scheller).

AUSTRIA. Nord-Tirol: Entry of Ötztal, above Ambach, alt. c. 800 m, 2 ad. (♀), (Loc. nT-68/1, leg. K. Thaler); Innsbruck, Martinswand, 1 ad. (♀), 1 juv. 10, 1969.IV.29 (Loc. I-69/5, leg. K. Thaler) and 1 juv. 10, 1969.V.17 (Loc. I-69/3, leg. B. Hauser); 32 ad. (15♂, 17♀), 16 subad. (5♂, 11♀), 9 juv. 10, 3 juv. 9, 7 juv. 8, 1969 (Loc. nT-69/2) *.

YUGOSLAVIA. Istria: Pola, Vodjnan, under stones, 1 juv. 10, 1969.IX.10 (Loc. Ju-69/31, leg. V. Mahnert); Ucka, above the hotel, alt. c. 950 m, 1 ad. (♀), 1969.IX.8 (Loc. Ju-69/7, leg. B. Hauser); same place, sieved litter, Berlese extraction, 33 ad. (11♂, 22♀), 30 subad. (17♂, 13♀), 4 juv. 10, 50 juv. 9, 4 juv. 8, 1969.IX.9 (Loc. Ju-69/28, leg. B. Hauser); Sneznik, below the Sviscaki cabin, alt. c. 1100 m, beech forest, sieved litter, Berlese extraction, 13 ad. (♀), 3 subad. (2♂, 1♀), 16 juv. 10, 1 juv. 9, 12 juv. 8, 1969.IX.11 (Loc. Ju-69/29, leg. B. Hauser). — Slovenia: Between Godovic and Crni Vrh, "Tarnovaner Wald", beech forest, alt. c. 650 m, sieved litter, Berlese extraction, 77 ad. (41♂, 36♀), 51 subad. (20♂, 31♀), 28 juv. 10, 17 juv. 9, 8 juv. 8, 1969.IX.12 (Loc. Ju-69/30, leg. B. Hauser).

HUNGARY. NW Budapest, Szabadsaghesy Singrósane, alt. 400 m, *Carpinus betulus* and *Quercus cerrea* forest, flotation, 1 juv. 8, 1973.V.11 (Loc. 1, leg. P. Brinck and P. H. Enckell). NW Debrecen, at the border of Puszta Hortobagy, Margitai forest, flotation, 2 ad. (♀), 1 juv. 10, 1 juv. 9, 1973.V.12 (Loc. 5, leg. P. Brinck and P. H. Enckell); same place, Ohati forest, at rook excrements in strongly manured oak and maple forest, flotation, 1 ad. (♀), 1 juv. 9, 1973.V.13 (Loc. 6, leg. P. Brinck and P. H. Enckell).

GREECE. Ionian Islands: Zante, Vrachionas Massif, near Jiri, the cave "spilia tou Chajoti", 1 ad. (♂), 1974.V.15 (Loc. Pel-74/27, leg. D. Tzanoudakis); Corfu, Pantokrater Massif, near Spartilas, in the cave Gravalithia, alt. 270 m, guano deposit, Berlese extraction, 1 subad. (♀), 1973.IV.23 (Loc. Ep-73/5, leg. B. Hauser).

TURKEY. Bursa: Uludag, alt. 1900 m, 1 ad. (♀), 1969.VII.22 (Leg. C. Besuchet). — New to Turkey.

MOROCCO. Rif Atlas: Smila, alt. 630 m, soil sample from under *Pinus radiata*, Berlese extraction, 2 juv. 8, 1978.VI.2 (Loc. Mar-78/13, leg. B. Hauser). — Moyen Atlas: Tazzeka district, Bab-Azhar, soil sample from under cork oaks, Berlese extraction, 3 ad. (♀), 1 subad. (♀), 1 juv. 10, 3 juv. 9, 2 juv. 8, 1978.VI.1 (Loc. Mar-78/9, leg. B. Hauser).

Remarks: The species is one of the most widely distributed symphylans we know (Vide SCHELLER 1978: 252) but it seems not earlier to have been collected in Turkey.

* More details at present not available.

Two specimens were collected in caves on the Greek islands Corfu and Zante. If it is there a troglophile or the specimens might be accidental invaders from epigean habitats is unknown. Most likely it is the latter. ATTEMS (1959: 297) has already reported *S. vulgaris* from some caves in southeast Europe.

Genus *Scolopendrellopsis* Bagnall, 1913

Subgenus *Symphylellopsis* Ribaut, 1931

2. *Scolopendrellopsis (Symphylellopsis) balcanica* (Remy, 1943)

Arch. Zool. exp. gén. 83: 4-6, figs 1-2.

Material examined. 5 specimens.

GREECE. Peloponnesus: Near Kandila, in the cave "spilia tou Garzeniko", alt. 1080 m, 1 ad. (♀), 1976.V.18 (Loc. The-76/26, leg. B. Hauser).

MOROCCO. Rif Atlas: El-Gouzat, alt. 1050 m, soil sample from under holly, Berlese extraction, 1 juv. 10, 3 juv. 8, 1978.VI.2 (Loc. Mar-78/12, leg. B. Hauser). — New to Morocco.

Remarks: *Scolopendrellopsis balcanica* is a rare species which has been found in the southern half of Europe and in North Africa. However, it is here reported from Morocco for the first time.

One of the above specimens was from a cave in Greece. Because earlier finds all were epigean the species seems to be an accidental cavernicole there.

3. *Scolopendrellopsis (Symphylellopsis) subnuda* (Hansen, 1903)

Q. Jl. microsc. Sci., n. Ser. 47: 70-72, pl. 6, figs 2a-g.

Material examined. 84 specimens.

AUSTRIA. Innsbruck, Martinswand, 1 juv. 10, 1 juv. 9, 1969.V.17 (Loc. I-69/3, leg. B. Hauser).

SPAIN. Balearic Islands: Mallorca, between Valldemosa and La Granja, 2 ad. (♀), 1 juv. 10, 2 juv. 9, 1970.III.16 (Loc. Ma-70/2, leg. B. Hauser); same island, between Lluch and Gorg Blau, 1 juv. 9, 1970.III.21 (Loc. Ma-70/8, leg. B. Hauser).

ITALY. Sicilia: Taormina, Castel Mola, 1 ad. (♀), 1977.XII.22 (Leg. U. Scheller).

YUGOSLAVIA. Istria: Ucka, above the hotel, alt. c. 950 m, sieved litter, Berlese extraction, 6 ad. (2♂, 4♀), 1 subad. (♀), 1 juv. 10, 1969.IX.9 (Loc. Ju-69/28, leg. B. Hauser). — Slovenia: Between Godovic and Crni Vrh, "Tarnovaner Wald", beech forest, alt. c. 650 m, sieved litter, Berlese extraction, 10 ad. (3♂, 7♀), 8 subad. (3♂, 5♀), 6 juv. 10, 1969.IX.12 (Loc. Ju-69/30, leg. B. Hauser).

HUNGARY. NW Debrecen, at the border of Puszta Hortobagy, Margitai forest, flotation, 3 ad. (1♀, 2 sex?), 1 subad. (♀), 2 juv. 10, 5 juv. 9, 1 juv. 8, 1973.V.12 (Loc. 5, leg. P. Brinck and P. H. Enckell). — New to Hungary.

GREECE. Ionian Islands: Corfu, W of Kassiopi, macchia, 1 ad. (♀), 1 subad. (♀), 3 juv. 10, 1 juv. 8, 1960.IV.17 (Loc. Ko 18-21, leg. B. Hauser).

MOROCCO. Rif Atlas: Smila, alt. 630 m, soil sample from under *Pinus radiata*, Berlese extraction, 1 subad. (sex?), 1978.VI.2 (Loc. Mar-78/13, leg. B. Hauser). — Moyen Atlas: Between Ifrane and Azrou, alt. 1600 m, soil sample from under *Quercus* sp., Berlese extraction, 1 ad. (♀), 1 subad. (♀), 4 juv. 10, 9 juv. 9, 9 juv. 8, 1978.VI.4 (Loc. Mar-78/23, leg. B. Hauser).

Remarks: Though the species is very often met with in most European countries it seems to be here reported from Hungary for the first time.

Genus *Scolopendrella* Gervais, 18394. *Scolopendrella notacantha* Gervais, 1839

C. r. Séanc. Acad. Sci. Paris, 1839, 9: 530-532 and *Revue Zool.*, 1840, 2: 279-281, 316-317.

Material examined. 10 specimens.

AUSTRIA. Nord-Tirol:

5 ad. (♀), 1 subad. (♀), 1 juv. 10, 1969 (Loc. nT-69/2) *.

YUGOSLAVIA. Slovenia: Julian Alps, Triglav, Vrata valley, alt. 1000-1100 m, beech forest, under stones, 2 ad. (♂, ♀), 1 subad. (♀), 1967.VIII.24 (Loc. Tg-67/1, leg. B. Hauser).

Remarks: The species is very widely distributed in Europe, except in the north, and also in northwest Africa.

Genus *Geophilella* Ribaut, 19135. *Geophilella pyrenaica* Ribaut, 1913

Bull. Soc. Hist. nat. Toulouse 46: 77-84, figs 1-6.

Material examined. 13 specimens.

FRANCE. Haute-Savoie: Thonon-les-Bains, delta of the Dranses, 1 juv. 10, 1970.V.23 (Leg. B. Hauser).

AUSTRIA. Nord-Tirol: Silz, Petersberg, 1 ad. (♀), 1968.V.1 (Loc. nT-68/2, leg. V. Mahnert). — New to Austria.

SPAIN. Balearic Islands: Mallorca, between Valldemosa and La Granja, 1 ad. (♀), 1 juv. 9, 1970.III.16 (Loc. Ma-70/2, leg. B. Hauser).

YUGOSLAVIA. Istria: Ucka, above the hotel, alt. c. 950 m, 1 ad. (♂), 1 juv. 10, 1969.IX.9 (Loc. Ju-69/28, leg. B. Hauser); Sneznik, below the Sviscaki cabin, alt. c. 1100 m, beech forest, sieved litter, Berlese extraction, 1 ad. (♂), 1 subad. (sex?), 2 juv. 9, 1 juv. 8, 1969.IX.11 (Loc. Ju-69/29, leg. B. Hauser).

MOROCCO. Moyen Atlas: Tazzeka district, Bab-Azhar, soil sample from under corkoaks, Berlese extraction, 1 juv. 8, 1978.VI.1 (Loc. Mar-78/9, leg. B. Hauser).

Remarks: *Geophilella pyrenaica* is a species belonging to West Palaearctic and with about the same range as *Scolopendrella notacantha* but its area does not extend north of Central Europe. It has not earlier been reported from Austria.

Family SCUTIGERELLIDAE

Genus *Hanseniella* Bagnall, 19136. *Hanseniella nivea* (Scopoli, 1763)

Entomologia carniolica exhibens Insecta Carnioliae indigenae et distributa in ordines, genera, species, varietates methodo Linnaeana. *Trattner*, 420 pp. *Wien*.

Material examined. 96 specimens.

SWITZERLAND. Genève: Genève, Natural History Museum, garden, 1 juv. 8, 1973.VII.30 (Leg. U. Scheller). — Ticino: Near Chiasso, forest near Sagno, alt. c. 700 m, 3 ad. (2 ♀, 1 sex?), 1 subad. (♀), 2 juv. 10, 1969.VI.3 (Loc. Te-69/1, leg. B. Hauser) and 1 subad. (♀) (Loc. Te-69/28, leg. C. Besuchet); Chiasso, Ressigna, flotation and Berlese extraction, 1 juv. 9, 1969.VI.2 (Loc. Te-69/33, leg. C. Besuchet and I. Löbl); Rancate, chestnut stump, flotation and Berlese extraction, 1 ad. (♀), 1969.VI.5 (Loc. Te-69/34, leg. C. Besuchet and I. Löbl); Bruzella, leaf litter, sieving and Berlese extraction, 1 ad. (♀), 1 juv. 9, 1969.VI.3 (Loc. Te-69/32, leg. C. Besuchet and I. Löbl); Morbio Superiore, dead leaves, sieving and Berlese extraction, 2 ad. (♀), 1969.VI.3 (Loc. Te-69/37, leg. I. Löbl); Monte San Giorgio, at Serpiano road towards the top, alt. 650 m, 1 ad. (sex?), 2 subad. (♀, sex?), 1969.VI.5 (Loc. Te-69/11, leg. B. Hauser); Val di Muggio, near Scereso, alt. c. 560 m, 1969.VI.3, manual collecting, 1 juv. 10 (Loc. Te-69/4, leg. B. Hauser); same place, Berlese extraction, 2 ad. (♂, ♀), 2 subad. (♂, ♀), 3 juv. 10, 2 juv. 9 (Loc. Te-69/14 and Te-69/17, leg. B. Hauser); Monte Generoso, at the road to Cragno, near A. di Salorino, alt. c. 880 m, 15 ad. (10 ♂, 4 ♀, 1 sex?), 3 subad. (1 ♂, 2 sex?), 1969.VI.4 (Loc. Te-69/6, leg. B. Hauser); same place, Cragno, alt. c. 940 m, 1 ad. (♂), 1969.VI.4 (Loc. Te-69/7, leg. B. Hauser).

AUSTRIA. Nord-Tirol: 14 ad. (8 ♂, 6 ♀), 2 subad. (♂, ♀), 12 juv. 10, 7 juv. 9, 2 juv. 8, 2 stad.?, 1969. (Loc. nT-69/2) * — Carinthia: Loibl pass, at the road near Raidenwirt, at brook, alt. c. 900 m, 1 subad. (♀), 1969.IX.7 (Loc. Ju-69/4, leg. V. Mahnert).

ROUMANIA. E Reghin, Mures Magyar, Padurea "Mociar", in foena under oak, 1 subad. (♂), 1 juv. 10, 1974.X.16 (Loc. 74-202, leg. A. Fjellberg).

ITALY. Friulu-Venezia Giulia; Julian Alps, between Passo di Tanamea and Musi, alt. c. 800 m, 1 subad. (♀), 1969.IX.18 (Loc. It-69/10, leg. V. Mahnert).

YUGOSLAVIA. Istria: Vodjnan, in macchia, 2 ad. (♀), 1 juv. 10, 1969.IX.10 (Loc. Ju-69/17, leg. V. Mahnert); Rovinj, Crveni Otok, 1 ad. (♀), 1968.VII.29 (Loc. Ju-68/11, leg. K. Thaler); same place, San Giovanni, 1 ad. (♂), 1968.VIII.1 (Loc. Ju-68/20, leg. K. Thaler); Sneznik, alt. c. 1100 m, 1 ad. (♂), 1969.IX.11 (Loc. Ju-69/33, leg. V. Mahnert); same place, alt. c. 1000 m, pine forest, 1 ad. (♂), 1969.IX.11 (Loc. Ju-69/34, leg. V. Mahnert). — Slovenia: Between Godovic and Crni Vrh, "Tarnovaner Wald", beech forest, alt. c. 650 m, sieved litter, Berlese extraction, 1 ad. (♀), 1969.IX.12 (Loc. Ju-69/30, leg. B. Hauser); Triglav, Vrata valley, above the Aljzev cathedral, alt. 1000-1100 m, beech forest, in foena under stones, 1 ad. (♀), 1967. VIII.26 (Loc. Ju-67/6, leg. K. Thaler).

Remarks: *Hanseniella nivea* is widespread in central and south Europe and northwest Africa.

Genus *Scutigera* Ryder, 18827. *Scutigera alpina* Rochaix, 1955

Atti Ist. Veneto Sc. 113: 13-17, figs 1-2.

Material examined. 22 specimens.

SWITZERLAND. Ticino: Monte San Giorgio, at the Serpiano road towards the top, alt. 650 m, 2 ad. (♂, ♀), 1969.VI.5 (Loc. Te-69/11, leg. B. Hauser); Monte Generoso, at the road to Salorino, alt. c. 880 m, 1 ad. (sex?), 1969.VI.4 (Loc. Te-69/6, leg. B. Hauser); same place, Cragno, alt. c. 940 m, 1 ad. (♀), 1969.VI.4 (Loc. Te-69/7, leg. B. Hauser). — New to Switzerland.

AUSTRIA. Carinthia: Loibl pass, at the road near Raidenwirt, at brook, alt. c. 900 m, 1 ad. (♀), 1969.IX.7 (Loc. Ju-69/3, leg. K. Thaler). — New to Austria.

SPAIN. Balearic Islands: Mallorca, between Valldemosa and La Granja, 1 ad. (sex?), 1 subad. (♀), 1970.III.16 (Loc. Ma-70/2, leg. B. Hauser). — New to Spain.

ITALY. Veneto: Near Longarone, alt. 800 m, 2 ad. (♂), 1969.IX.20 (Loc. It-69/13, leg. V. Mahnert). — Friuli-Venezia Giulia: Julian Alps, between Passo di Tanamea and Musi, alt. c. 800 m, 1 ad. (♀), 1969.IX.18 (Loc. It-69/10, leg. V. Mahnert).

YUGOSLAVIA. Istria: Ucka, near the top, alt. c. 1350 m, 1969.IX.8, 1 ad. (sex?) (Loc. Ju-69/5, leg. B. Hauser) and 1 ad. (♀) (Loc. Ju-69/6, leg. V. Mahnert); same place, above the hotel, alt. c. 950 m, 1969.IX.8, 2 ad. (♂, ♀) (Loc. Ju-69/7, leg. B. Hauser) and 1 ad. (♀) (Loc. Ju-69/9, Leg. E. and K. Thaler); Sneznik, near the end of the road, alt. c. 1500 m, beech forest, 1 ad. (♀), 1969.IX.11 (Loc. Ju-69/20, leg. B. Hauser); same place, alt. c. 800-900 m, spruce forest, 1 ad. (♀), 1969.IX.11 (Loc. Ju-69/22, leg. B. Hauser). — Slovenia: Between Godovic and Crni Vrh, at road, "Tarnovaner Wald", alt. c. 650 m, beech forest, 2 ad. (♀), 1969.IX.12 (Loc. Ju-69/23, leg. B. Hauser and loc. Ju-69/35, leg. V. Mahnert); Col de Vrsic, north slope, alt. c. 1200 m, 1 ad. (♂), 1969.IX.13 (Loc. Ju-69/27, leg. B. Hauser); Near Kocevje, Friedrichstein, 2 ad. (♂), 1975.VII.?? (Leg. B. Hauser).

Remarks: The species was earlier known from 5 specimens from 5 localities only, four in north Italy (ROCHAIX 1955: 13; SCHELLER 1968: 128-129) and one (cf. *alpina*) in south Yugoslavia (JUPEAU 1957: 27). The specimens of the Geneva collections extend the area to Switzerland, Austria and Spain.

8. *Scutigerella carpatica* Juberthie-Jupeau and Tabacaru, 1968

Bull. Mus. Hist. nat., Paris, Sér. 2, 40: 508-516, figs 7-10.

Material examined. 3 specimens.

YUGOSLAVIA. Slovenia: Kocevje, Stojna, Jelenov studenec, 3 ad. (♂), 1974.VI.20 (Leg. E. Pretner). — New to Yugoslavia.

Remarks: The species is here reported from Yugoslavia for the first time. It was previously not known outside those ten localities in the Roumanian Carpathians from which it was described.

9. *Scutigerella causeyae* Michelbacher, 1942

Ann. ent. Soc. Am. 35: 280-283, pl. 3, fig. 2.

Material examined. 21 specimens.

AUSTRIA. Nord-Tirol: Stams-Locherboden, above the north abutment of the suspension bridge, alt. 670-700 m, pine forest, under stones, 2 ad. (♀, sex?), 1967.V.27 (Loc. nT-67/4, leg. K. Thaler); Innsbruck, Martinswand, 1 ad. (♂), 1 subad. (sex?), 1969.IV.29 (Loc. I-69/5, leg. K. Thaler). Innsbruck, Lanser Kopf, alt. c. 800 m, 1 ad. (♂), 1968.V.31 (Loc. nT-68/5, leg. K. Thaler. Tuxer Alps, Vikarspitze, alt. c. 2250 m, under stones in grass, 2 ad. (♂, ♀), 1967.VI.25 (Leg. K. Thaler).

ITALY. Veneto: Lago di Garda, San Vigilio, Malcesine, 4 ad. (1♂, 2♀, 1 sex?), 1969.III.21 (Loc. Ga-69/1, leg. K. Thaler).

YUGOSLAVIA. Istria: Ucka, near the top, alt. c. 1350 m, 1969.IX.8, 1 ad. (♂), 1 subad. (sex?) (Loc. Ju-69/5, leg. B. Hauser) and 1 ad. (♂) (Loc. Ju-69/6, leg. V. Mahnert); Opatija, 1 ad. (♂), 1969.IV.5 (Leg. C. Pfaller). — Slovenia: Between Godovic and Crni Vrh, at road, "Tarnovaner

Wald², alt. c. 650 m, beech forest, 2 ad. (♂), 1969.IX.12 (Loc. Ju-69/23, B. Hauser); Col de Vrsic, alt. 1650 m, 1 subad. (♀), 1969.IX.12 (Loc. Ju-69/25, leg. B. Hauser); Julian Alps, Triglav, Tominskova, near the Aljzev cathedral, alt. 1070 m, beech forest, under stones, 3 ad. (1♂, 2♀), 1967.VIII.26 (Loc. Tg-67/8, leg. B. Hauser).

Remarks: *ScutigereUa causeyae* has earlier been reported from the USA, Sweden, Ireland, Austria, Great Britain, Westgermany, the southwestern USSR, Italy and Yugoslavia. The Italian locality mentioned above is the second from that country.

10. *ScutigereUa hauserae* sp. n. (Figs 1 and 2)

Material examined. 2 specimens.

Holotype. Ad. (♀) from Yugoslavia, Postojnska Jama, Biospeleological station, basin No. 57, 1974.VI.15 (Loc. Ju-74/3, leg. Elisabeth Hauser). The specimen is in the Museum of Natural History, Geneva.

Paratype. Ad. (♂), same data as holotype.

DESCRIPTION

Length: 4.66 (–4.80) * mm.

Head: Broader than long, broadest behind the middle; lateral angle at articulation point of mandible very distinct. Central rod most indistinct, anterior branches vestigial and posterior ones not recognizable; oblique rods at hind margin of head lacking. Longest seta at mandibular basis 1.2 times as long as largest diameter of first antennal segment. Dorsal surface of head covered with many setae of varying lengths. Apart from a few inner setae and 5 at base of antenna the longest setae are concentrated near posterior and posterolateral margins. Longest posterolateral setae shorter than largest diameter of first antennal segment. Cuticle glabrous. Palp of first maxilla broader than thick and with 3 subequal pointed distal spines.

Antennae: Distal part of left antenna broken in both specimens; right antenna with 40 (61) segments. First segment 1.8 times as wide as long; it has 4 primary setae, a thick dorsal one and 3 thin inner ones; thick seta 0.5 and thin setae 0.4 of largest diameter of segment. An additional thin seta protrudes perpendicularly on basal part of inner side. Second segment 1.8 times as wide as long; it has 9 primary setae evenly distributed around the segment; setae of inner side thinner than other setae.

Each proximal segment with a single primary whorl of setae; secondary whorl begins on ventral side of segment 7 (8). Spined organs begin on dorsal side of segment 6; in primary whorl outside the organ there are 1-3 short thin setae about as long as the organ. Terminal segment 1.6 times as long as wide with about 30 mostly anteriorly directed setae; longest setae about as long as corresponding setae of proximal segments. Apical spined organ arises from a low protuberance and its length is one fourth of length of segment; branching point near the middle. There are two small subapical spined organs less than half as long as the larger one.

* Paratype in brackets.

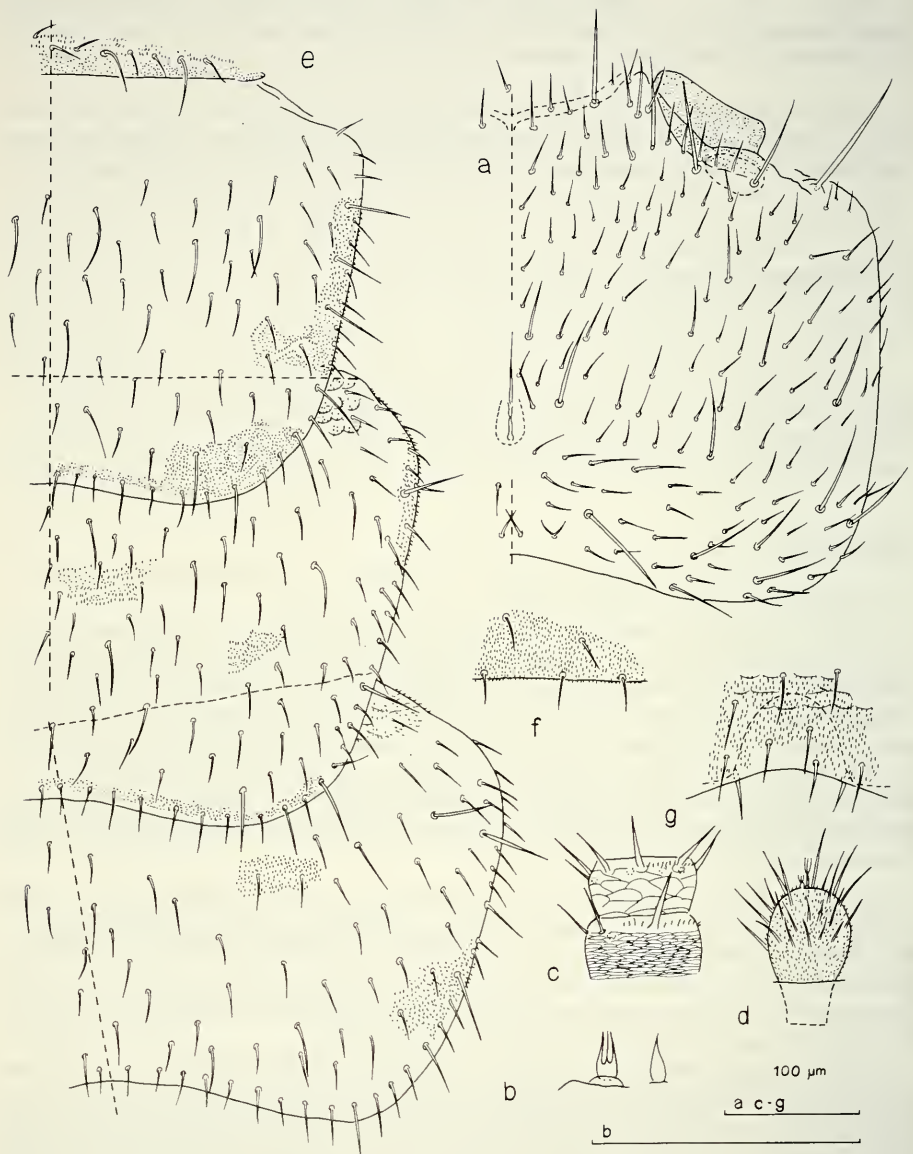


FIG. 1.

Scutigera hauserae sp. n., holotype. *a*. Head, right side, tergal view (anterior end not drawn). *b*. Palp of right maxilla: left, sternal view; right, lateral view. *c-d*. Antenna, right side, tergal view: *c*, first two segments; *d*, apical segment. *e*. Tergites 1-4, right half (pubescence only partially drawn). *f*. Posterior margin of penultimate tergite. *g*. Caudal cavity of last tergite.

Pubescence increases outwards. Basal segment almost glabrous with a high number of very short cuticular scales; a single row of sparse pubescence hairs on outer half just outside primary whorl; second segment with large glabrous scales and a denser row of pubescence hairs than on preceding segment. Pubescence sparse on about ten proximal segments. No particularly thickened setae on ventral side of segments.

T e r g i t e s . First tergite rudimentary with (12 -) 13 setae, 4 of which are more prominent than the others. Second tergite complete, with rounded lateral margins and posterior margin only slightly emarginate; it is 1.5 (- 1.7) times as broad as long with (42 -) 45 marginal (or submarginal) setae (3 -) 5 of which are lateromarginal, prominent,

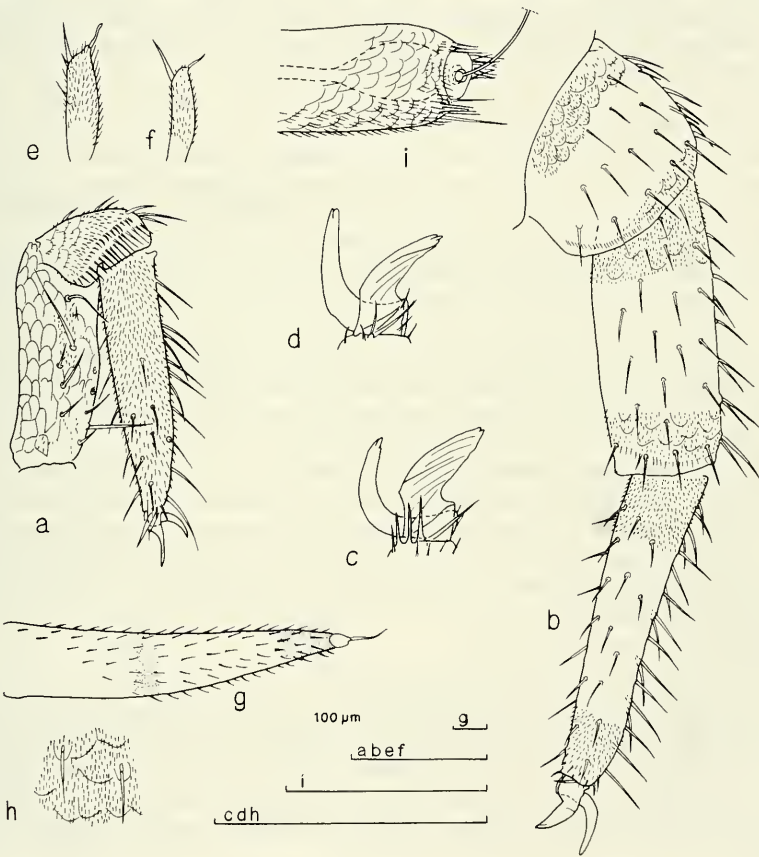


FIG. 2.

Scutigerebella hauserae sp. n., holotype. *a*. First leg, left side, anterior view. *b*. 12th leg, left side, anterior view. *c*. Claws of 9th leg, anterior view. *d*. Claws of 12th leg, anterior view. *e*. Stylus, 12th leg. *f*. Stylus, 3rd leg. *g*. Cercus, left side, outer view. *h*. Cercus, left side, outer central surface. *i*. Pygidial cone, distal two thirds with sensory pit and sensory hair (the latter only proximal part).

Pubescence and/or scaly cuticular pattern only partially drawn in *a*, *b*, *g* and *i*.

1.9-2.7 times as long as shortest marginal setae. Surface of tergite with many short setae on posterior three fourths; among these setae there are (10-) 12 longer ones. Cuticle granular-pubescent; hind margin glabrous. Third tergite broader and longer with almost straight lateral margins and hind margin a little more emarginate; it is (1.5-) 1.6 times as broad as long; setae and cuticle similar to those on preceding tergite. Fourth tergite 2.4 times as broad as long. Penultimate tergite deeply emarginate; setae very thin, pointed. Last tergite with a broad U-shaped and covered posteromedian cavity.

L e g s . Tarsus of P1 4.3 (-4.5) times as long as wide, tapering distally. Setae increasing in length distally, longest one as long as diameter of joint; longest row with (5-) 6 setae. Pubescence dense, distinct. Tibia with 7 setae which are on posterior and tergal sides only; cuticle partly scaly, partly pubescent; distal pubescence long comb-like. Femur with many setae on posterior and sternal sides; 5 of them are long and protruding, longest one 0.4 of length of tarsus; tergal side of joint glabrous, scaly. Anterior claw nearly straight, blunt, its length 0.2 of length of tarsus and 1.2 times as long as posterior claw. Length of front seta 0.8 of length of posterior claw.

Tarsus of P12 (4.4-) 5.0 times as long as wide, slowly tapering towards distal end, ventral side nearly straight. There are at least 7 distinct rows of thin pointed setae, longest one with 7 (-8) setae. Ventral and lateral setae subequal in length; dorsal setae increasing in length distally, longest one almost 0.9 of largest diameter of tarsus. Tibia (2.2-) 2.4 times as long as wide; its length (0.8-) 0.9 of length of tarsus; anterior and dorsal sides with many setae, posterior side with a few only. Longest dorsal row with 7 setae; length of its most distal seta 0.5 of largest diameter of tibia. Femur as long as wide, setose except on posterior and ventral surfaces; most distal dorsal setae longest. Pubescence dense on tarsus and anterior side of tibia and femur, sparse on posterior side of tibia, lacking on posterior side of femur. Claws stout, apices jagged as if broken off; surface of anterior claw rough with subparallel longitudinal ridges; claws subequal in length, length of anterior one almost 0.2 of length of tarsus. Claws of all legs of similar shape, partly thicker than on P12.

Styli of P12 3.7 times as long as wide, their length 0.3 of length of tarsus; subapical seta pointed and longest, 0.3 of length of stylus, apical seta not very pointed, slightly S-curved, 0.6 of length of subapical seta; posterior side with two additional setae the length of which is equal to apical seta; pubescence dense. Length of styli slightly decreasing anteriorly. The maximum number of additional setae: at most one on styli of legs 5-11, 1-2 ones on those of leg 12.

Coxal sacs at bases of legs 3-10.

Coxal plates of leg 12 with 2 setae (paratype).

C e r c i . They are (4.5-) 4.8 times as long as wide, 0.1 of length of body, distinctly shorter than leg 12. Setae short, thin, pointed, depressed, subequal in length; length of setae 0.3 of largest width of cercus. Two apical setae: longer one 0.7 of largest width of cercus, 0.2 of length of cercus; shorter one 0.2 of length of longer seta. Terminal area shorter than 0.1 of length of cercus. Cuticle indistinctly scaly with dense and short pubescence.

S e n s o r y h a i r . The bulbous bases of the sensory hairs long and extended. Hairs of pit straight, simple.

Affinities. The species may be placed near *silvestrii* Michelbacher (1942) from south Italy and south France, *alpina* Rochaix (1955) with wide range in south Europe and *seposita* Scheller (1966) from north Italy. It can be easily distinguished from them by the

significant shape and structure of the claws but also by comparing the shape and posterior margin of the anterior tergites, almost straight in *alpina* and *seposita*, deeply indented in *silvestrii*. Other separating characters are in e.g. the chaetotaxy of the last pair of legs and the antennae.

Remarks: The symphylans seldom develop species peculiar to caves. However, one such species is earlier known from Postojna, *Scolopendrellopsis pretneri* JUBERTHIE-JUPEAU (1963), four specimens of which were collected from there from a subterranean water surface. It has not been found elsewhere and is characterized e.g. by long antennae and very thin and lengthened claws. The former character it has in common with this new *Scutigerebella* species in which the antennae are 0.7 and 0.8 of the body length in the holotype and paratype specimens respectively. This might represent an adaptation to troglobiontic living as well as the thin setae, thinner than generally found in the genus, and the long slender cerci. On the other side *S. hauserae* has thick stout claws more indicating an epigean invasion. Future collecting of the surface fauna around Postojna may give the answer of the question of the origin of these two partly peculiar species.

11. *Scutigerebella palmonii* Michelbacher, 1942

Ann. ent. Soc. Am. 35: 274-276, pl. 2, figs 1a-i, and (s. n. *S. nodicercus*), *ibidem*: 276-278, pl. 2, figs 2a-i.

Material examined. 37 specimens.

FRANCE. Haute-Savoie: Vuache, near Arcine, 2 ad. (♀), 1970.VI.6 (Leg. B. Hauser).

SWITZERLAND. Genève: Genève, Natural History Museum, garden, 1 ad. (♀), 1 juv. 10, 1 juv. 9, 1 juv. 8, 1973.VII.30 (Leg. U. Scheller); same place, Villereuse 5, garden, 2 ad. (♂, ♀), 1970.V.28 (Leg. B. Hauser and J. C. Régnier). — Ticino: Monte San Giorgio, at the Serpiano road towards the top, alt. 650 m, 2 ad. (sex?), 1969.VI.5 (Loc. Te-69/11, leg. B. Hauser).

AUSTRIA. Carinthia: Loibl pass, at the road near Raidenwirt, at brook, alt. c. 900 m, 1 subad. (sex?), 1969.IX.7 (Loc. Ju-69/1, leg. B. Hauser).

ITALY. Sicilia: Taormina, Madonna Roca, 1 ad. (♀), 1977.XII.20 (Leg. U. Scheller). — Veneto: Lago di Garda, San Vigilio, Malcesine, 6 ad. (3♂, 3♀), 3 subad. (♀), 1969.III.21 (Loc. Ga-69/1, leg. K. Thaler).

YUGOSLAVIA. Istria: Rovinj, behind student's hostel, bush forest, 1 ad. (♂), 1968.VII.27 (Loc. Ro-68/14, leg. B. Hauser); Opatija, 1 ad. (♂), 1969.IV.5 (Leg. C. Pfaller). — Slovenia: Between Godovic and Crni Vrh, at road, alt. c. 650 m, beech forest, 4 ad. (♀), 1969.IX.12 (Loc. Ju-69/23, leg. B. Hauser); same place, beech forest, 3 subad. (1♂, 2♀), 1969.IX.12 (Loc. Ju-69/35, leg. V. Mahnert).

TURKEY. Bursa: Uludag, alt. 1900 m, 7 ad. (2♂, 4♀, 1 sex?), 1969.VII.22 (Leg. C. Besuchet). — New to Turkey.

Remarks: *Scutigerebella palmonii* is here reported from Turkey for the first time. It was expected to occur there because it earlier had been collected in the southwestern USSR (SCHELLER and GOLOVATCH 1982: 144). It is widely distributed in Central Europe and probably it has a very wide Palaearctic range. Moreover, it is also reported from the USA and Japan.

12. *Scutigerebella orghidani* Juberthie-Jupeau and Tabacaru, 1968

Bull. Mus. Hist. nat., Paris, Sér. 2, 40: 505-510, figs 3-6.

Material examined. 9 specimens.

YUGOSLAVIA. Istria: Sneznik, near the Sviscaki cabin, alt. c. 1240 m, 2 ad. (σ , φ), 1969.IX.10 (Loc. Ju-69/18, leg. B. Hauser); same place, alt. c. 800-900 m, spruce forest, 1 ad. (σ), 1969.IX.11 (Loc. Ju-69/22, leg. B. Hauser); same place, alt. c. 1100 m, 1 ad. (φ), 1969.IX.11 (Loc. Ju-69/33, leg. V. Mahnert). — Slovenia: Soca valley, near Trenta, alt. c. 700 m, 2 juv. 10, 2 juv. 9, 1969.IX.11 (Loc. Ju-69/24, leg. B. Hauser); Cez Prag, in direction Staničeva-Hütte, alt. 1200-2100 m, grass heath, under stones, 1 ad. (φ), 1967.VIII.24 (Loc. Ju-67/2, leg. K. Thaler). — New to Yugoslavia.

Remarks: The species has not previously been reported outside three localities in the Roumanian Carpathians.

13. *Scutigerebella remyi* Juberthie-Jupeau, 1963

Bull. Mus. Hist. nat., Paris, Sér. 2, 35: 172-175, 2 figs.

Material examined. 38 specimens.

FRANCE. Haute-Savoie: Mont-Blanc, Plan de l'Aiguille-du-Midi, stony alpine heath, alt. c. 2100 m, 1 ad. (σ), 1972.VII.23 (Leg. B. Hauser and U. Scheller); Thonon-les-Bains, delta of the Dranses, 2 ad. (σ , φ), 1970.V.23 (Leg. B. Hauser). — New to France.

AUSTRIA. Nord-Tirol: Obergurgl, Zirbenwald, alt. 2000 m, 2 ad. (σ , φ), 1968.VIII.8, and 4 ad. (2 σ , 1 φ , 1 sex?), 1968.IX.17 (Loc. OG-68/4, leg. K. Thaler); same place, Soon, slope, alt. 2000 m, 2 ad. (φ), 1967.VII.31 (Leg. V. Mahnert); Umhausen, alt. 1200 m, 1 ad. (φ), 1968.VIII.27 (Loc. nT-68/9, leg. K. Thaler); Ambach, alt. c. 800 m, 3 ad. (2 σ , 1 sex?), 1968.V.6 (Loc. nT-68/1, leg. K. Thaler); Serleskamm, Wasenwand, alt. c. 2450 m, grass heath, under stones, 3 ad. (φ), 1967.VII.2 (Leg. K. Thaler).

SPAIN. Balearic Islands: Mallorca, between Valldemosa and La Granja, 1 ad. (σ), 1970.III.16 (Loc. Ma-70/2, leg. B. Hauser).

ITALY. Veneto: Near Longarone, alt. 800 m, 2 ad. (σ), 1969.IX.20 (Loc. It-69/13, leg. V. Mahnert).

YUGOSLAVIA. Istria: Rovinj, San Giovanni, 1 subad. (φ), 1968.VIII.1 (Loc. Ju-68/20, leg. K. Thaler); Vodjnan, under stones, 1 ad. (φ), 1969.IX.10 (Loc. Ju-69/31, leg. V. Mahnert); Ucka, near the top, alt. c. 1350 m, 2 ad. (φ), 1969.IX.8 (Loc. Ju-69/5-6, leg. B. Hauser and V. Mahnert); same place, above the hotel, alt. c. 950 m, 1 ad. (φ), 1969.IX.9 (Loc. Ju-69/9, leg. E. and K. Thaler); Sneznik, at the end of the road, alt. c. 1600 m, from under dwarf pines, 2 ad. (σ), 1969.IX.11 (Loc. Ju-69/19, leg. B. Hauser); same place, alt. 800-900 m, pine forest, 1 subad. (σ) (Loc. Ju-69/22, leg. B. Hauser). — Slovenia: Julian Alps, Triglav, Tominskova, near the Aljazev cathedral, alt. 1070 m, beech forest, under stones, 5 ad. (2 σ , 3 φ), 1 subad. (φ), 1 juv. 10, 1967.VIII.26 (Loc. Tg-67/8, leg. B. Hauser); same place and date, 1 ad. (σ), 1 juv. 9 (Loc. Ju-67/6, leg. K. Thaler). — New to Yugoslavia.

Remarks: The species has earlier been collected from the northern parts of Spain and Italy, from south Westgermany, and from Austria and Roumania. It is here reported from France and Yugoslavia for the first time.

14. *Scutigerella seposita* Scheller, 1966

Zool. Anz. 176: 320-323, fig. 1.

Material examined. 2 specimens.

YUGOSLAVIA. Slovenia: Julian Alps, Triglav, Vrata valley, above the Aljazev cathedral, alt. 1000-1100 m, beech forest, under stone, 1 ad. (♀), 1967.VIII.26 (Loc. Ju-67/6, leg. K. Thaler). — New to Yugoslavia.

Remarks: The species has been collected once earlier, at the locus typicus in Italy at the north end of Lago di Garda.

15. *Scutigerella silvestrii* Michelbacher, 1942

Ann. ent. Soc. Am. 35: 272-274, pl. 1, fig. 2.

Material examined. 4 specimens.

FRANCE. Hérault: Grotte de Julio, guano/soil mixture, Berlese extraction, 1 ad. (♂), 3 juv. 8, 1982.IX.11 (Leg. P. Strinati and V. Aellen). — New to France.

Remarks: Outside the locus typicus at Portici in south Italy the species has not earlier been reported from Europe but four localities are known from the USA and two from Mexico (SCHELLER 1986: 111). Five of the eight localities known are from caves (USA 3, Mexico 1, France 1) but probably this does not mean that the species is most often a troglobite. It is taxonomically very alike other *Scutigerella* species and may be an overlooked mainly epigeal species.

16. *Scutigerella verhoeffi* Michelbacher, 1942

Ann. ent. Soc. Am. 35: 279-281, pl. 3, fig. 1.

Material examined. 4 specimens.

YUGOSLAVIA. Istria: Ucka, near the top, alt. c. 1350 m, 1 ad. (♀), 1969.IX.8 (Loc. Ju-69/22, leg. B. Hauser). — Slovenia: Soca valley, near Trenta, alt. c. 700 m, 1 ad. (♂), 1969.IX.12 (Loc. Ju-69/24, leg. B. Hauser). — New to Yugoslavia.

Remarks: *Scutigerella verhoeffi* is new to Yugoslavia and here reported for the first time outside its locus typicus on the northern side of the Alps.

REMARKS ON DISTRIBUTION

In the above list 798 specimens belonging to 7 genera and 16 species are accounted for. Though many records are occasional some are noteworthy, not only the occurrence of a new *Scutigerella* species from the Postojna cave. In some cases they considerably widen the known range. So *Symphylella vulgaris* and *Scutigerella palmonii* have been found in Turkey from where symphylans were not earlier known. Moreover, *Scolopendrellopsis subnuda* is new to Hungary, *Geophilella pyrenaica* to Austria, *Scutigerella*

alpina to Switzerland, Austria and Spain, *S. remyi* to France and Yugoslavia and *S. silvestrii* to France. From Yugoslavia *S. carpatica*, *S. orghidani*, *S. seposita* too are reported for the first time. These new records are proportionately many and are reflecting our imperfect knowledge of the ranges of the bulk of species.

In Scolopendrellidae the majority of the West Palaearctic species has long been known to have wide ranges, sometimes extending even outside the region e. g. *Symphylella vulgaris* and *S. isabellae* (Grassi), *Scolopendrellopsis subnuda* and *S. microcolpa* (Muhr), *Scolopendrella notacantha* and *Geophilella pyrenaica*.

In Scutigerellidae on the other hand, in spite of a greater total number of species, only a few species have shown ranges comparable with those of the mentioned species. Of that reason many of the new records in Scutigerellidae were of great interest. The West Palaearctic species belong to two genera, *Hanseniella* with two species and *Scutigerella* with many. Among the latter most species have been described from Central Europe and the majority of them have not later appeared outside. Their origin is unknown though it has been reasonable, since they most often seemed to have small ranges, to look upon them as having developed in Central European isolates probably arisen after the retreat of the Pleistocene ice. The ranges of some of these species (*Scutigerella alpina*, *carpatica*, *orghidani*, *seposita* and *verhoeffi*) have here been widened indicating that many species in the genus cover wider areas than was supposed. Even if the areas are still small if compared to wide range species the extension of range indicates that the distributional patterns of many Scutigerellidae species may be more alike those in Scolopendrellidae than was earlier known. The impression of the Symphyla as a group containing a high proportion of widely distributed species is confirmed.

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